

Synthesis of Ag/MnO₂ Complex Nanorods and MnO₂ Nanotubes using Galvanic replacement reaction

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Manganese dioxide (MnO₂) nanorods and nanotubes were synthesized via the Galvanic replacement reaction. To make the manganese dioxide nanorods and nanotubes, precursor of potassium permanganate was added to the sacrificing silver rods suspension that prepared by the polyol method. Due to the standard reduction potential difference between silver and mangan ions, the solid silver was replaced by the MnO₂ forming Ag/MnO₂ core-shell nanorods. Furthermore, MnO₂ nanotubes were prepared by increasing the concentration of the potassium permanganate. Investigation on the properties of the MnO₂ products revealed that the crystalline structure and the UV-vis absorbance of the silver rod was reduced as the MnO₂ reduction proceeded. This MnO₂ nanorods also showed improved electrical property which is applicable to the supercapacitor.